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ABSTRACT

Science Fiction is interdisciplinary by its very nature, merging elements of science, fantasy, and popular art into an open-ended mythology shared by its creators and audience. The use of science fiction can help in making education more general, more flexible, and more relevant to possible future needs. Even at its most general level of information, in the most inept styles, science fiction can still give a personal immediacy to issues which statistics and discursive prose usually lack. To make adequate use of science fiction in the schools may require applications of the "open classroom" concept--that is, a classroom which would be "open" to the world, to the future, and to the individual student. However, interdisciplinary concerns can be intrcduced into many courses within the traditional curriculum, since bringing in the future can help liberate almost any subject matter. Thus, it may be possible tc turn high school and college courses at all levels in the direction of relevance by making this form of literature serve extra-literary ends. (HOD)

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A PROPOSAL FOR THE MANDATORY USE OF SCIENCE FICTION IN THE GENERAL CURRICULUM

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a paper for presentation at the 1971 convention of the National Council of Teachers of English (Perspectives: "Teaching Science Fiction," 11/26, 10:45 a.m.)

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Generations of historians have coaxed smiles from their students by pointing out that the Holy Roman Empire was neither Holy, nor Roman, nor even a respectable Empire. Similarly, it is easy to fault science fiction for being neither good science nor good fiction. Most science fiction is literary fantasy which pays some respect to science and technology, and which is accessible to readers with little training in either science or literature.

Science fiction seldom offers a valid picture of the workings of science and scientists.[1] Neither, of course, do works of non-fiction devoted to science present more than a glimpse of a specific discipline or less than a glorification of a particular scientist.[2] ~~Science fiction does not have a corner on the market~~ of Science fiction does not have a corner on the market of[3] prophecy, or even a very good track record in prediction. Seers and astrologists offer surety, futurologists offer extrapolation without the trimmings of romance, while SF writers more often than not sneak into print with popularized pictures of devices already on the drawing-board, borrow their material from a stockpile of conventions, or take dead aim on uncertain topics with a shotgun full of guesses, one of which might strike home.[3]

Few works of science fiction can compare with literary masterpieces in depth of insight, sense of aesthetic form, or intensity of felt experience. To be accessible to a potential mass market, most SF is subliterary, providing at minimal

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levels the values, delights, and goals which bring readers back to Homer, Dante. Shakespeare, and Cervantes. The attraction of science fiction is more ofteh than not extraliterary, directing the reader's attention not so much toward specifically literary experiences as toward the contemplation of possibilities and wish-fulfillments.[4]

All of which is perhaps to paraphrase the observation of Theodore Sturgeon, the science fiction and fantasy writer, who once declared that 90% of science fiction is crud, in accordance with Sturgeon's Law which maintains that 90% of everything is crud.[5] But I come not to praise that 10%, which still can not satisfy both literary and predictive cravings, rather to claim that even in the 90% there is much that may be of educational value. In other words, fantasy, an awareness of science and technology, and an accessibility to the average reader, those characteristics which I have maintained elsewhere define science fiction, are tools of whichcontemporary education stands sorely in need.[6]

The world we live in is continually changing, so fast that the only thing we can say for sure about the world our students will inherit is that it will be different.[7] But education, may say, is hard pressed to demonstrate its relevance for the present, let alone for the future. If this is so, it may be because the tools and culture of the past have been emphasized too much for their own sake, and not enough for their future usefulness. Change produces nostalgia, and the systems of classification by which a bureaucracy maintains itself tend to become rigid; somewhere along the way administrators, and teachers, and even students may forget that learning, to be useful, should be general, hypothetical, and to a large extent voluntary.

Ideally, all education is supposed to be for the future. Even the study of Latin was once defended on the basis that it trained the mind to be able to deal with other things. Reading, writing, and arithmetic are taught not because they are inherently good, but because they will enable a student to adapt them to his purposes. And every academic discipline, every major, every field of study in

high school and college, is aimed theoretically at enabling a student to stand on his own, to make his own decisions when conditions change and he no longer can find an authority to give him the answers.

Since conditions are bound to change, and at what seems to be an increasing rate of acceleration, this principle of general education is more than ever necessary today. Specialized vocational training is likely to be out of date by the time the student graduates; most firms have to train their employees to work withint their system, and prefer them to have a grasp of general principles when they start. Many disciplines cross over academic department boundaries today, once a student gets out of school and into the real world; discovery, in fact, often depends on cross-fertilization of problems and theories from ostensible different disciplines.

Good citizenship alone demands that we have some idea of the problems and changes affecting other areas of the world and other fields of expertise, so that we don't make the mistake of trying to tie people down to where they were the last time we looked, be it five, or ten, or twenty years ago.[8] For all of its redundancy, and its magnified molehills, the Information Explosion is a real problem, but most of it takes place at the most sophisticated levels of study. Although no one can be a "Renaissance Man,"knowing all there is to know, general principles and interdisciplinary relations can be transmitted to an unspecialized audience.[9]

The worst offenders against general education may be the schools themselves, whose bureaucratic department structure rewards teachers and professors for narrow sophistication and raises obstacles to interdisciplinary cooperation. But what kind of science is it that we teach which disregards technological applications, social effects, and the role science plays in the functioning of the human mind? How can social studies legitimately ignore the elements of culture contributed by science and the humanities? And what earthly good to anyone is the study of the "Humanities," without consideration of the nature of the scientific way of thought and its effects on society, on culture, on humane values, and on personal experience and feelings?

Science fiction is interdisciplinary by its very nature, merging elements of science, fantasy, and popular art into an open-ended mythology shared by its creators and audience alike.[10] My classes in science fiction are divided into units for studying elements of science, social criticism and analysis, psychological implications, mythic patterns, mass media, and literature, and they can only scratch the surface. At the least, science fiction will describe the effects of different scientific ideas, technological developments, and ways of social organization; at its best, it will make the experience of confronting these things more real than any theoretical text can. Either way, the use of science fiction can help in making education more general, more felxible, and more relevant to possible future needs.

But education should be future-oriented in a more specific way, too. Although we may not be able to say for sure just what things will be like in ten, or twenty, or fifty years, we know that they sill not be as they are. So students (and people in general) need to be able to keep their imaginations flexible, and capable of dealing with the unexpected. Playing with alternative futures is one way of encouraging this flexibility, one that should not be restricted to potential scientists, as Isaac Asimov once suggested, who most likely would be the kind of students who would naturally gravitate toward science fiction.[11] Because it can emphasize the relativity of values which might otherwise be taken for granted, science fiction can not only serve as a "scientist-detector," but it can also serve, as Postman and Weingartner point out, to help students develop a built-in "crap-detector."[12]

Beyond developing perspective, and the ability to adjust to changing circumstances, playing with alternate futures can also help us to do something constructive about the future. If we do not want the future to catch us by surprise all the time, or to make us live out the uncomfortable effects of other people's plans, we must learn to anticipate some of the future before it arrives, to prepare for what we can not change, to hasten the desirable, to divert the un-

undesirable.[13] We can assume the continuation of certain trends and constants into the future, and project relative degrees of probability; we can even project the results and effects of such catastrophes and scientific breakthroughs as can not themselves be predicted or calculated.[14] We can learn to think hypothetically about our lives and consider, in the light of these probabilities and possibilities, what values we want and need to discount, preserve, or expand, in order to make conditions not only minimally, but optimally, livable.[15] These are not useless exercises, for the future will be in fact the sum of what each of us creates in the present.

Much of science fiction is ideal for inculcating such a hypothetical orientation. The population explosion, war, natural and man-made catastrophes, the exploration of the unknown, and the dangers of technocracy are among the most common themes in science fiction.[16] Familiar SF topics also include automation, pollution, the leisure revolution, the information explosion, sensory overload, the unmanageability of the cities, racism, sexism, and the possibilities inherent in the genetic and medicinal elements of what one writer has called the "biological time-bomb."[17] Even at its most general level of information, in the most inept styles, science fiction can still give a personal immediacy to these issues which statistics and discursive prose usually lack. It should be noted too in passing that even futurologists frequently put their predictions into the form of "scenarios," which, like the "pocket universe" of the science fiction novel, simplify the picture to the point at which moral and pragmatic judgments may be easier to make, in a tentative and hypothetical way.[18]

What I have claimed up to now may seem to be suggesting a replacement of one rigid set of curriculum requirements with another, throwing out the past and bringing in the future. That is certainly not my intent, although I would not be adverse to the idea of teaching the past in terms of the future, or of the leading edge of the shifting present. However, before we start designing complicated curricula, aimed at forcing students into general learning patterns, and a hypothetical

approach to life, we should remember that education should also be voluntary, a principle diametrically opposed to any rigid curriculum. Not what a teacher teaches, but what a student learns, is the end result of education which seems to me the most meaningful, and what a student learns depends to a large extent on what he wants to learn. Wants can be stimulated, of course, by fear of punishment (of various kinds and severities), by desire to please, or by continual reinforcement. In the absence of the latter, however, the former tend to wear off once the student escapes the artificial closed environment of the classroom.[19] But continual reinforcement for future-oriented study does exist outside the classroom, in a social and technological environment which threatens him with future shock.

Outside the school, he is continually bombarded with impressions of change, from the news media, from the marketplace, from various political groups of every scale and direction, which are all striving for his attention.[20] In so far as he is interested in learning, it is primarily in terms of how he can cope with this world, perhaps only to a degree of supporting himself, perhaps to the extent of making some significant contribution to mankind. Despite the NOW-orientation of our commercial society, which contributes greatly to the NOW-oriented political demands of so many young people, he knows full well that whatever he can do will not make its full effect felt now, but rather in the future, preferably the very near future. And it should take only a slight refocussing of his energies, in the direction of this kind of realism, for him to see that the future is the major battleground on which his confrontation with life is taking place.[21]

The major block to contemplating the future is not really that it will be a merely reflective, ivory-tower activity, dissipating or siphoning off energy that could be poured into the present struggle. It is in fact future-orientation which fuels most if not all movements with goals of any revolutionary nature, from the Marxist's dream of victory and a classless society to the ecology freak's nightmare of an earth uninhabitable by man.[22] The main block, it seems to me, is psychological.

in that the one sure thing the future holds is death, which adds its sombre colors to any vision of lesser crises in the interim.[23] One's vision of the future seems to be inextricably related to one's image of himself, a most personal matter whose exploration is not generally encouraged by classes in school. Contemporary politics, religious convictions, sex and interpersonal relationships are too controversial for many school districts, and too compartmentalized in most college classes, for school to be of much help in a student's coming to any but the most fragmented picture of himself. And those students who are least capable of letting their minds wander into the future are also likely to be those whose imaginations have been crippled the most by schools' emphases on the past, on hierarchies of values which dwarf his anticipated accomplishments, on narrow specialization, and on the exclusion of self and the subjective.[24]

This is not to say, of course, that the average student is in fact straining to volunteer his involvement in a high school or college class, and that all we have to do as teachers to help him realize his potential is to turn him loose in a library of science fiction. Even those who have not been psychologically crippled are likely to be wary of any teacher who preaches the doctrine of Rabelais' utopia, "Do as thou wilt," without doing anything himself to earn the students' confidence, to draw them out of themselves, and to encourage their taking over more and more responsibility for their own learning.[25] What I am trying to get across is that if a student's help and personal expertise are genuinely wanted, if a diversity of viewpoints is truly welcome, and if his personal goals are accepted as valid, on at least a provisional basis, then he can learn more of value to him than by all the requirements and prerequisites, goads and punishments known to man.[26]

In the case of science fiction, students' interest usually is voluntary, for a number of reasons, not all of which should be as welcome as its stress on the future. Much of science fiction appeals to students because it is

escapist; unlike drugs and music at peak volume, however, it leads them from the immediate present back into contemplation of the present from a distance, a different perspective. Awareness of this contemporary relevance in its specific applications may require some stimulation. Most science fiction is relatively easy to read; although it may reward careful observation and a consciousness of different levels of communication, these are not usually necessary for enjoyment of the surface adventure. The confrontation is as often between knowledge and ignorance as between stereotyped figures of good and evil, but the oversimplified conventions of commertial fiction can lead to a certain amount of distortion of actual human behavior. A final reason for the popularity of science fiction is its accessibility; not only on the newsstand or in the bookstore, science fiction is available in the movies, on television, in our technological environment, and in our dreams and nightmares, and not always in only fictional form.

To make adequate use of science fiction in the schools may require a kind of utopia in the classroom, such as is brewing in successful applications of the "open classroom" concept.[27] Certainly I have been suggesting things in connection with the use of science fiction which would work best in a classroom which is at least partly "open," to the world, to the future, to the individual student. Personal involvement in planning study programs, in making discussions work; a welcoming of diversity, of contributions from different realms of knowledge, a reduction of importance for subject matter barriers; an allowance for feelings, desires, imagination, as well as for what appear to be "the facts"; a mode of approach which eliminates any absolute expertise and should even question traditional knowledge; an emphasis on encouragement, rather than requirements; all of these go better with an "open" structure than with the traditonal framework of units, grades, pigeonholes, and bolted-seat classrooms.

But in the interim, until the millennium comes and does away with such

relics of the nineteenth century factory system, it is also possible to achieve results on a more limited scale within the present system. Herbert Kohl found science fiction and fantasy to be a way in which his disadvantaged grade-schoolers could communicate.[28] Postman and Weingartner point out that bringing in the future can help liberate almost any subject matter.[29] Interdisciplinary concerns can be introduced into many courses within the traditional curriculum. Both interests can be served by means of science fiction, of course, and science fiction textbooks have begun to surface in the past year or two. One anthology combines fact and fiction for anthropology courses; another encourages speculation for writing by proceeding from present-oriented articles and fantasies to future-oriented science fiction; still others take the approach of literary history, most notably Bruce Franklin's collection of nineteenth century American science fiction.[30] There is a large amount of bibliographic apparatus available pertaining to science fiction; although a convenient index of themes and subjects and motifs is not yet a reality, it is possible to construct reading lists for almost any conceivable unit of subject-matter.[31] Thus it may be possible to turn high school and college courses at all levels in the direction of relevance by making this form of literature serve extra-literary ends.

In conclusion, it should be apparent by now that what I am advocating is not classes in science fiction, which should not in fact be necessary but for the fact that science fiction has been for so long a neglected field of literature, but rather science fiction in all sorts of classes. Nor would I maintain that any student who is turned off by science fiction be forced to read it. The mandatory nature of my proposal pertains to its implied request that all schools make science fiction available to their students, as a part of, or at least an adjunct to, their general curriculum.

[1]On this complaint, see for example John Lear, "Let's Put Some Science into Science Fiction," Popular Science Monthly (August, 1954), pp. 135-137 ff., and Hermann J. Muller, "Science Fiction as an Escape," The Humanist, 17, No.6 (1957), 333-346.

[2]See, for example, Editors of International Science and Technology, The Way of the Scientist: Interviews from the World of Science and Technology (New York: Simon and Schuster, 1966). Some furore was caused recently when some of the less than glorified trade secrets were revealed in James D. Watson, The Double Helix: A Personal Account of the Discovery of the Structure of DNA (New York: Atheneum, 1968).

[3]See for example Robert A. Heinlein, "Science Fiction: Its Nature, Faults, and Virtues," in Basil Davenport et al., The Science Fiction Novel: Imagination and Social Criticism, 2nd ed., Chicago: Advent, 1964, pp. 30-37, and G. Harry Stine, "Science Fiction is Too Conservative," Analog (May, 1961), pp. 83-99.

[4]A sampling of relevant opinion would include the following: Arthur S. Barron, "Why Do Scientists Read Science Fiction?" Bulletin of the Atomic Scientists (Feb. 1957), pp.62-65ff.; Bdnita P. Bernabev, "Science Fiction: A New Mythos," Psychoanalytic Quarterly, 26, No.4 (1957), 527-35; Leslie A. Fiedler, Love and Death in the American Novel (Cleveland and New York: Meridian, 1962), pp. 478-480; Joseph Kostolefsky, "Science, Yes--Fiction, Maybe," Antioch Review, 13, No.2 (June, 1953), 236-240.

[5]Theodore Sturgeon, "On Hand: A Book" (review column), Venture Science Fiction (Sept., 1957), p. 49.

[6]David N. Samuelson, "Studies in the Contemporary American and British Science Fiction Novel," Diss. University of Southern California 1969, pp. 45-83.

[7]This observation, true or not, has been made again and again throughout the past decade, and is the basis of Alvin Toffler's Future Shock (New York: Random House, 1970), and Robert Heilbroner's The Future as History (New York: Grove, 1961) among numerous others. Arthur C. Clarke stressed the connection between a world of change and science fiction in 1962, when he accepted UNESCO's Kalinga Award for science writing; see "Kalinga Award Speech," pp. 139-143 in Voices from the Sky: Previews of the Coming Space Age (New York: Pyramid, 1967).

[8]Even people on the leading edge of change in one field may resist the thought of change elsewhere, according to Toffler, p. 309.

[9]See for example Jacques Barzun, Science: The Glorious Entertainment (New York: Harper and Row, 1965); Jerome Bruner, The Process of Education (New York: Vintage, 1963); Moody E. Prior, Science and the Humanities (Evanston: Northwestern University Press, 1962).

[10]Besides Bernabev, and Samuelson, see also Northrop Frye, The Modern Century (NewYork: Oxford University Press, 1967), pp. 103-118.

[11]Isaac Asimov, "Sword of Achilles" [1963], in Is Anyone There? (Garden City: Doubleday, 1967), pp. 298-302.

[12]Neil Postman and Charles Weingartner, Teaching as a Subversive Activity (New York: Dell, 1969), pp. 1-15.

[13]This is the operating principle behind that remarkable textbook, Worlds in the Making: Probes for Students of the Future, ed. Maryjane Dunstan and Patricia Garlan (Englewood Cliffs, N.J.: Prentice-Hall, 1970).

[14]See for example Herman Kahn and Anthony J. Wiener, The Year 2000: A Framework for Speculation . . . . (New York: MacMillan, 1967).

[15]See for example Robert Theobald, An Alternative Future for America (II), rev. ed. (Chicago: Swallow, 1970); see also his Dialogue series for Bobbs-Merrill.

[16]Examples may include the following: for the population explosion, Stand on Zanzibar by John Brunner, and Make Room, Make Room by Harry Harrison; for war, Earthlight by Arthur C. Clarke, and Starship Trooper by Robert A. Heinlein; for catastrophes, No Blade of Grass by John Christopher, and Earth Abides by George R. Stewart; for technocracy, We by Eugene Zamiatin is the best, in my opinion, over Brave New World and 1984, but see also The Solarians by Norman Spinrad; on the exploration of the unknown, e.s.p., alien intelligence, and the nature of time are three common themes, but extraterrestrial exploration in general is probably the most frequently used kind of unknown.

[17]Automation is viewed positively in Asimov's robot stories and novels, negatively in E. M. Forster's "The Machine Stops," and Jack Williamson's The Humanoids; pollution is the major topic in Thomas M. Disch's new anthology, The Ruins of Earth; the leisure revolution is treated in terms of new arts and entertainments, seldom the main topic of a work of science fiction, although see James Blish's collection, New Dreams this Morning; the information explosion, too, is more or less assumed as a general rule, with Asimov at one point developing the idea of an entire planet dedicated to processing information; sensory overload is treated metaphorically in Samuel I. Delany's Nova, and Brunner's Stand on Zanzibar, in its Dos Passos-McLuhanesque form, is an example of it; the unmanageability of the cities is treated in Stand on Zanzibar, *and Delany's Towers of Toron trilogy; racism, between the human race and others, comes up in every alien contact story; sexism has been inherent in the genre, although women authors and protagonists began to emerge even in the Forties, and a number are found in current writing. Developments treated in The Biological Time-Bomb by Gordon Rattray Taylor (New York and Cleveland: World, 1968) include the following, with examples of science fiction appended: genetic developments, The Seedling Stars by James Blish, as well as Brave New World, of course; transplants, A Gift from Earth and other writings by Larry Niven; drugs, several works by Brian W. Aldiss, J. G. Ballard, Delany, Philip K. Dick, and Norman Spinrad; immortality, To Live Forever by Jack Vance, and Spinrad's Bug Jack Barron; cryogenics, The Door Into Summer by Heinlein, and "The Graveyard Heart" by Roger Zelazny.

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[18]See for example Kahn and Wiener, The Year 2000, passim.

[19]Even, or especially, the behaviorists grant that reinforcement must be rewarding and continual. See for example William Glasser, Schools Without Failure (New York: Harper and Row, 1969) and Reality Therapy (New York: Harper and Row, 1965); B. F. Skinner, Science and Human Behavior (New York: Free Press, 1953), Walden Two (New York: MacMillan, 1948), and Beyond Freedom and Dignity (New York: Knopf, 1971).

[20]See for example Toffler, pp. 295-315.

[21]See Postman and Weingartner, pp. 207-218.

[22]This is the basic thesis of Fred L. Polak's exhaustive study, The Image of the Future, tr. Elise Boulding, 2v. (Leyden, Netherlands: Oceana, 1961)

[23]See Frye, Modern Century, pp. 30-36.

[24]See Toffler, pp. 342-367, especially p. 363.

[25]One case study in the misapplication of "open classroom" techniques is reviewed in Barrett J. Mandel, "The Absurd Calling: Or, I Know Someone Who Knows John Holt," AAUP Bulletin, 57, No.3 (September, 1971), 334-340; scarcely an issue goes by of Change without some reports on more and less successful applications.

[26]The ideals are perhaps best represented in Carl B. Rogers, Freedom to Learn: A View of What Education Might Become (Columbus, Ohio: Merrill, 1969).

[27]See Herbert Kohl, The Open Classroom (New York: Random House, 1970); see also note 25 above.

[28]Herbert Kohl, Thirty-Six Children (New York: Signet, 1967), passim.

[29]Postman and Weingartaer, pp. 203-204.

[30]Leon E. Stover and Harry Harrison, eds., Apeman, Spaceman: Anthropological Science Fiction (New York: Berkley, 1968); Dick Allen, ed., Science Fiction: The Future (New York: Harcourt, Brace, Jovanovich, 1971); H. Bruce Franklin, ed., Future Perfect: American Science Fiction of the Nineteenth Century (New York: Oxford University Press, 1966).

[31]Bibliographical apparatus includes the following: Donald B. Day, Index to the Science Fiction Magazines, 1926-1950 (Portland, Oregon: Perri Press, 1952); Erwin F. Strauss, The MIT Science Fiction Society's Index to the S-F Magazines, 1951-1965 (Cambridge, Massachusetts: MIT Science Fiction Society, 1965) and its annual supplements from the New England Science Fiction Association; W. R. Cole, A Checklist of Science Fiction Anthologies (/New York/: W. R. Cole, 1964). A bibliography of secondary materials is supposed to be in print this year, edited by Thomas D. Clareson, and published by the Center for Popular Culture of the University of Bowling Green. One thing which is sadly lacking is some kind of index for themes, motifs, etc., concerning which see Samuel J. Sackett, "A Motif-Index for Science Fiction," Extrapolation 1 (May, 1960), 38.

Some thematic anthologies which may be of use to the teacher, if they are still in print, or otherwise available, include the following: Brian W. Aldiss, ed., All About Venus (New York: Dell, 1968); Arthur C. Clarke, ed., Time Probe: The Sciences in Science Fiction (New York: Dell, 1966); Martin Greenberg, ed. Men Against the Stars (New York: Gnome Press, 1950; Pyramid, 1956, 1963); Damon Knight, ed., Cities of Wonder (New York: MacFaddan, 1967), The Metal Smile (New York: Belmont, 1968), and Science Fiction Inventions (New York: Lancer, 1967); Sam Moskowitz, ed., The Coming of the Robots (New York: Collier, 1963), and Exploring Other Worlds (New York: Collier, 1963); Frederik Pohl, ed. The Expert Dreamers, featuring stories by scientists, (New York: Avon, 1962); Harry Harrison, ed., The Year 2000 (Garden City: Doubleday, 1970); Isaac Asimov, ed., Where Do We Go From Here? (Garden City: Doubleday, 1971). Other historical anthologies, some of which are out of print, include the following: Damon Knight, ed., A Century of Science Fiction (New York: Simon and Schuster, 19) and 100 Years of Science Fiction (New York: Simon and Schuster, 19); Harold Kuebler, ed., The Treasury of Science Fiction Classics (Garden City: Doubleday, 1954); Sam Moskowitz, ed., Masterpieces of Science Fiction (Cleveland and New York: World, 1966) and Modern Masterpieces of Science Fiction (Cleveland and New York: World, 1965); Robert Silverberg, ed., The Mirror of Infinity: A Critics' Anthology of Science Fiction (New York: Canfield Press, 1970), which includes critical essays, and Science Fiction Hall of Fame, v.1 (Garden City: Doubleday, 1970; reprinted by Avon), with chronological arrangement of the winners of the poll of the Science Fiction Writers Association.